

IV. "On the Result of Chilling Copper-Tin Alloys." By C. T. HEYCOCK, F.R.S., and F. H. NEVILLE, F.R.S.

V. "On the Theory of Consistence of Logical Class-frequencies, and its Geometrical Representation." By G. UDNY YULE.

"On the Structure and Affinities of Fossil Plants from the Palaeozoic Rocks. IV. The Seed-like Fructification of *Lepidocarpon*, a Genus of Lycopodiaceous Cones from the Carboniferous Formation." By D. H. SCOTT, M.A., Ph.D., F.R.S., Hon. Keeper of the Jodrell Laboratory, Royal Gardens, Kew. Received February 19,—Read February 28, 1901.

(Abstract.)

A short account of the new genus *Lepidocarpon* has been given in a note communicated to the Royal Society last August*; the present paper contains a full, illustrated description of the fossils in question, together with a discussion of their morphology and affinities.

The strobilus of *Lepidocarpon Lomaxi*, the Coal-measure species, is, in its earlier condition, in all respects that of a *Lepidostrobus*, of the type of *L. Oldhamius*.

In each megasporangium, however, a single megaspore or embryo-sac alone came to perfection, filling almost the whole sporangial cavity, but accompanied by the remains of its abortive sister-cells. An integument ultimately grew up from the sporophyll, completely enclosing the megasporangium, and leaving only a narrow slit-like opening, or micropyle, along the top. As shown in specially favourable specimens, both of *Lepidocarpon Lomaxi*, and of *L. Wildianum*, the more ancient Burntisland form, the functional megaspore became filled by a large-celled prothallus, resembling that of the recent *Isoëtes* or *Selaginella*. The whole body, consisting of the sporophyll, bearing the integumented megasporangium and its contents, became detached from the strobilus, and in this isolated condition is identical with the "seed" described by Williamson under the name of *Cardiocarpon anomalum*, which, however, proves to be totally distinct from the Cordaitan seed so named by Carruthers.

The seed-like organs of *Lepidocarpon* are regarded by the author as presenting close analogies with true seeds, but as differing too widely from the seeds of any known Spermatophyta to afford any proof of affinity. The case appears rather to be one of parallel or convergent development, and not to indicate any genetic connection between the Lycopods and the Gymnosperms, or other Phanerogams.

* "Note on the Occurrence of a Seed-like Fructification in certain Palaeozoic Lycopods," 'Roy. Soc. Proc.,' vol. 67, p. 306.